

CLAIMSREPLACED BY
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1. A multi-axis robot comprising an arm (A) for moving a tool (0) in space and actuated by electric motors (10), and a control system comprising:
- a controller (C) which includes at least one power module (22) for supplying said motors (10) and at least one calculation and processing unit (26) used in particular to compute the path of the arm (A) and generate control signals for said modules,
 - link means (52, B) between said arm, said power module and said unit used at least to supply said motors from said module, control said module by said unit and transmit feedback signals from said arm to said unit and/or said power module,
- characterized in that said link means (52, B) comprise a single functional bus (B) linking a control unit (30) associated with said calculation and processing unit (26), on the one hand, to said module (22) and, on the other hand, to at least one digital interface (14) with at least one position sensor (12) on said arm (A), said interface being incorporated in said arm or located in its immediate vicinity.
2. The robot as claimed in claim 1, characterized in that said single functional bus (B) is divided into at least two structural buses (B₁, B₂) linking, for the first, said control unit (30) to said module (22) and, for the second (B₂) or subsequent buses, said control unit (30) to said interface (14).
3. The robot as claimed in claim 2, characterized in

that said first structural bus is a metallic bus (B₁), particularly made of copper.

- 5 4. The robot as claimed in one of claims 2 or 3,
characterized in that said second structural bus
or one of said other buses is an optical fiber bus
 (B₂).
- 10 5. The robot as claimed in one of the preceding
claims, characterized in that said control unit
 (30) is linked to said calculation and processing
 unit (26) by a PCI type bus (28).
- 15 6. The robot as claimed in one of claims 1 to 4,
characterized in that said control unit (30) is
 incorporated in said calculation and processing
 unit (26).
- 20 7. The robot as claimed in one of the preceding
claims, characterized in that it comprises an
 identification and calibration card (16) included
 on said arm (A) or located in its immediate
 vicinity, said card being incorporated in said
 functional bus (B).
- 25 8. The robot as claimed in one of the preceding
claims, characterized in that the or each
 structural bus (B₁, B₂) is designed to be extended
 by additional connection means (B'₁, B'₂) to
30 interact with at least one external unit (12',
 12", 14', 14", 22') processing information.
- 35 9. The robot as claimed in one of the preceding
claims, characterized in that said link means also
 comprise a power conductor (52) linking said
 module or modules (22) to said arm (A),
 independently of said functional bus (B).
10. 10. The robot as claimed in one of the preceding

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claims, characterized in that said first structural bus (B₁) is connected directly or indirectly to power modules (22), each dedicated to a motor of said robot (R).

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11. The robot as claimed in one of the preceding claims, characterized in that said digital interface is an interface card (14) for computing the speed and/or the acceleration of the movement measured by the or each associated sensor (12), serializing its output signal and, where appropriate, digitizing the output signals of said sensor or sensors when they are analog.

15 12. The robot as claimed in one of claims 1 to 10, characterized in that said interface is incorporated in the associated sensor and is for computing the speed and the acceleration of the movement measured by said sensor, serializing its output signal and, where appropriate, digitizing the output signal of said sensor when it is analog.

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